Attachment 1: Description of Emission Reduction Measure Form

Please fill out one form for each emission reduction measure. See instructions in Attachment 2.

Title: Planktos Inc.: GHG Offsets via Forest and Ocean Carbon Capture & Sequestration (CCS)

Type of Measure (check all that apply):

- ☐ Direct Regulation
- ☒ Market-Based Compliance
- ☐ Monetary Incentive
- ☒ Non-Monetary Incentive
- ☒ Voluntary
- ☐ Alternative Compliance Mechanism
- ☐ Other Describe: **This measure enables all sources, regulated or voluntary, to offset and/or remediate GHG emissions and atmospheric CO2. This measure depends on monetary incentives to generate marketable assets (carbon credits). This measure delivers non-market (non-monetary) value in the form of collateral environmental benefits effecting water quality, water supply and biodiversity.**

Responsible Agency: ARB, EPA, CAR

Sector:

- ☐ Transportation
- ☐ Electricity Generation
- ☐ Other Industrial
- ☐ Refineries
- ☐ Agriculture
- ☐ Cement
- ☒ Sequestration
- ☐ Other Describe:

2020 Baseline Emissions Assumed (MMT CO2E): 0.005 MT total to 2020 from office and transportation related sources.

Percent Reduction in 2020: Offsets produced between 2007-2020 will be ~150,000,000 tons, compared against emissions of ~5000 tons associated with business operations. Planktos is a net provider of GHG offsets. Thus, 30000% 'reduction' against 2020 projected emissions.

Cost-Effectiveness ($/metric ton CO2E) in 2020: Planktos ocean carbon costs = $1.60 / ton CO2e. Spreadsheet available on request.

Description: Planktos Inc. is a carbon capture & sequestration compamy, mitigating greenhouse gas emissions by restoring forests on land and plankton communities in the open ocean.

Planktos is engaged in restoring plankton productivity to portions of the open ocean. By restoring iron nutrients that have been declining in volume for the past 30 years,

phytoplankton communities will be returned in 10,000 hectare 'patches' of the pelagic ocean known to be iron poor.

Plankton are extremely efficient producers, and when relieved of nutrient stress will establish short-lived (4-6 months duration) pelagic ocean communities supporting krill, pelagic fish species, sea mammals and sea birds. In so doing, at least 20% of plankton biomass carbon will be exported to long term storage in the deep ocean (below 500 meters). Plankton restoration technology promises to provide the most cost effective, highest volume, quickest and most environmentally beneficial GHG mitigation of any technology currently proposed.

Planktos is seeking opportunities to demonstrate the benefits of this ocean restoration technology to Californians, in concert with local scientists and California agency representatives. Local demonstrations can be undertaken within the 200-mile California exclusive economic zone (EEZ), outside the California Current, and in open pelagic waters. Although Planktos plans to demonstrate the value of iron restoration in 10,000 sq. km. ocean 'patches', any size demonstration may be arranged. Benefits from a demonstration within California waters will include contributions to local anchovy populatioins, hence local sea mammal / sea bird propagation and survival. Measurable benefits to commercial fisheries can also be anticipated.

Emission Reduction Calculations and Assumptions: For Planktos ocean projects: 150 MT (minimum) CO2 sequestered as ocean biomass, 2007-2020.

Cost-Effectiveness Calculation and Assumptions: For Planktos: $233 M capital, O&M against 146 MT sequestered = $1.60 per ton cost

Spreadsheet available on request.

Implementation Barriers and Ways to Overcome Them: Barriers to application of ocean CCS are largely institutional in nature. Agencies have indicated that verification of biological offsets invites a great deal of uncertainty. Agencies have indicated that permanence of biological offsets cannot be assured.

However, methods for restoring ocean plankton productivity have been affirmed as a result of 10 international research endeavors and expenditures of over $100 million in public funds. Methods for monitoring, measuring and calculating long term sequestration of carbon in forest biomass/soils, and in the deep ocean below 500 meters are also well known.

If agencies remain concerned about issues of verifiability and permanence, and yet if biological offsets represent cost effective, environmentally beneficial additions to the "GHG management toolkit," then it remains for agencies to develop fair and reasonable performance standards dedicated to 'real, additional, verifiable, permament, enforceable and transparent' GHG offsets. Planktos and other offset providers remain committed to

these same goals, as reflected in the methodologies overseen by the CA Climate Action Registry. In this vein, Planktos has retained the services of Tetra Tech/EMI and DNV, both companies certifed by the California Climate Action Registry, to help develop verification strategies related to ocean biomass carbon capture & sequestration.

By continuing to develop reasonable performance criteria, and by continuing to insist on 'best available technology' for biological offsets, California agencies can optimize the role of biological offsets in helping the state achieve the ambitious goals of AB 32.

Potential Impact on Criteria and Toxic Pollutants: There will be no criteria or toxic pollutants created by either new forest or ocean restoration CCS.

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